

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the Application:

Listing of the Claims

5 1 - 30 (canceled)

31. (currently amended): A process for the production of refinery transportation fuel or blending components for refinery transportation fuel, which process comprises:

10 reacting a petroleum distillate consisting essentially of material boiling between about 50° C. and about 425° C. comprising a mixture of sulfur-containing, nitrogen-containing and other organic compounds derived from natural petroleum with a source of hydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst to assist by hydrogenation removal of sulfur and/or nitrogen from
15 hydrotreated distillate; and comprises one or more active metals selected from the group consisting of the elements having atomic numbers from 21 to 30, 39 to 48, and 72 to 78;

20 partitioning by distillation the hydrotreated distillate to provide at least one low-boiling organic part consisting of a sulfur-lean, mono-aromatic-rich fraction collected below a temperature in the range from 260° C. to 300° C., and a high-boiling organic part consisting of a sulfur-rich, mono-aromatic-lean fraction;

25 contacting a gaseous source of dioxygen with at least a portion of the low-boiling organic part in a liquid reaction medium containing a particulate, heterogeneous oxygenation catalyst system which exhibits a capability to enhance the incorporation of oxygen into a mixture of liquid organic compounds and comprises one or more ~~member catalyst-metal~~
30 selected from the group consisting of (a) an oxygenation catalyst containing from 1 percent to 30 percent chromium as oxide and from 0.1 percent to 5 percent platinum on a support comprising gamma alumina, (b) comprises chromium molybdate or bismuth molybdate and optionally

magnesium, and (c) gamma alumina and a catalyst represented by the
formula $\text{Na}_2\text{Cr}_2\text{O}_7$ in an amount of from 0.1 percent to 1.5 percent of the
total catalyst system ~~chromium, molybdenum, bismuth, manganese, iron,~~
~~and platinum, employed as metal oxide, mixed metal oxide, and/or basic~~
5 ~~salts of the metal or mixed metal oxide,~~ while maintaining the reaction
medium substantially free of halogen and/or halogen-containing
compounds, to form a liquid mixture comprising hydrocarbons,
oxygenated organic compounds, water of reaction, and acidic co-
products, such that the oxygenation of the hydrocarbon portion of the
10 liquid mixture is more than 1 percent by weight ;

separating from the mixture at least a first organic liquid of low
density comprising hydrocarbons, oxygenated sulfur-containing,
oxygenated nitrogen-containing and other oxygenated organic
compounds and acidic co-products and at least portions of the catalyst
15 metal, water of reaction and acidic co-products, and a second separated
liquid which is an aqueous solution containing at least a portion of the
oxidized sulfur-containing and/or nitrogen-containing organic
compounds; and

recovering from the first organic liquid a low-boiling oxygenated
20 product having a low content of nitrogen, acidic co-products and a sulfur
content of no more than 15 ppm .

32. (previously presented): The process according to claim 31
which further comprises contacting all or a portion of the separated first
organic liquid with a neutralizing agent comprising a bicarbonate selected
25 from the group consisting of sodium, potassium, barium, calcium and
magnesium bicarbonate thereby recovering a low-boiling oxygenated
product having a low content of acidic co-products.

33. (currently amended): The process according to claim 31
which further comprises contacting least a portion of the high-boiling
30 organic part with an immiscible phase comprising at least one organic
peracid or precursors of organic peracid in a liquid reaction mixture
maintained substantially free of catalytic active metals and/or active

metal-containing compounds and under conditions suitable for oxidation of one or more of the sulfur-containing and/or nitrogen-containing organic compounds;

5 separating at least a portion of the immiscible peracid-containing phase from the oxidized phase of the reaction mixture; [[and]]

contacting the oxidized phase of the reaction mixture with a solid sorbent, an ion exchange resin, and/or a suitable immiscible liquid containing a solvent or a soluble basic chemical compound, to obtain a high-boiling product containing less sulfur and/or less nitrogen than the
10 high-boiling fraction ; and

blending at least a portion of the low-boiling oxygenated product with at least a portion of the high-boiling product thereby obtaining components that exhibit sulfur levels of less than about 15 ppm, for refinery blending of ultra-low sulfur transportation fuels .

15 34. (canceled): ~~The process according to claim 33 which further comprises blending at least a portion of the low boiling oxygenated product with at least a portion of the high boiling product thereby obtaining components that exhibit sulfur levels of less than about 15 ppm, for refinery blending of ultra low sulfur transportation fuels.~~

20 35. (currently amended): The process according to claim 33 wherein the hydrogenation catalyst comprises at least two [[one]] active metals [[metal]], selected from the group consisting of cobalt, nickel, molybdenum and tungsten ~~the d-transition elements in the Periodic Table~~, each incorporated onto an inert support in an amount of
25 from about 0.1 percent to about 20 percent by weight of the total catalyst.

36. (previously presented): The process according to claim 33 which further comprises recovering at least a portion of the heterogeneous oxygenation catalyst system and injecting all or a portion of the recovered catalyst system into the liquid reaction medium.

30 37 (currently amended): The process according to claim 31 wherein the heterogeneous oxygenation catalyst system comprises an oxygenation catalyst containing [[from]] about 18 ~~1 percent to about 30~~

percent chromium as oxide and ~~[[from]]~~ about 1.5 ~~0.1 percent to about 5~~
percent platinum on a support comprising gamma alumina.

38. (currently amended): The process according to
claim 31 wherein the heterogeneous oxygenation catalyst system
5 comprises ~~chromium molybdate or bismuth molybdate~~ promoted with and
optionally magnesium.

39. (canceled): ~~The process according to claim 31 wherein the
heterogeneous oxygenation catalyst system comprises gamma alumina
and a catalyst represented by the formula $\text{Na}_2\text{Cr}_2\text{O}_7$ in an amount of~~
10 ~~from about 0.1 percent to about 1.5 percent of the total catalyst system.~~